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ABSTRACT

Successful learning in a discursive interaction demands that participants be able to follow the interaction from its beginning to its end; instruction on Asynchronous Learning Networks (ALNs) poses challenges because, unlike in face-to-face interaction, not all messages are serial. This paper offers strategies and techniques to help ALN teachers and students keep the thread of a prolonged, asynchronous discussion. Ways in which face-to-face conversational practice works to ensure the shared understanding of all the interactions are described, including turn taking, repair, overlap, and formulations. How asynchronous interactions may violate these practices and inhibit the construction of shared understanding is then addressed, including the loss of conversational practice in turn taking and overlap, turn taking and indexical repairs, and turn taking and formulations. The following two methods for communicating in asynchronous interactions in order to preserve face-to-face conversational practices and permit students to engage in discursive learning are proposed: using strategic snipping to simulate conversational overlaps, and using formulations and indexical repairs to emulate conversational practice. Two figures illustrate the graphical conversation network and the threaded topic listing. (DLS)

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Keeping the Thread: Helping Distance Students and Instructors Keep Track of Asynchronous Discussions

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Introduction

Asynchronous Learning Networks (ALNs) are a system of distance education in which the instructor and students interact through computer conferencing software and modem or network connections. An ALN is characterized by interactions that follow a many-to-many pattern (teacher and students "talking" to the entire class, and to individual students at the same time). This is unlike conventional face-to-face graduate school classrooms in which there is typically a one-to-many interaction (from teacher to students) with only occasional one-to-one (student to teacher) interactions.

ALNs are well suited to the delivery of instruction to students in widely separated geographic areas because there is no need for students and teacher to be together in one place at one time. Students and teacher can log in to the computer-mediated classroom at any time and send messages to each other with the certainty that their messages will be delivered to their recipient(s), and that the recipient(s) will read and respond to them at some time in the future.

Because of this interactive pattern, ALNs have been associated with constructivist learning methods in which the teacher acts as a more capable peer (MCP) (Vygotsky, 1978) to assist learners as they actively negotiate an understanding of curricular content. This instructional method has also been described as "discursive" (Laurillard, 1993).

Successful learning in a discursive interaction demands that the interactants are able to "follow" the interaction from its beginning to its end. This is because the discursive negotiation of understanding may traverse a very circuitous path as the teacher and students search for ways to communicate and understand embedded concepts, knowledge and skill. In the course of this, interactants develop ad hoc terms, and phrases to describe very personalized examples and inside-humor that are hallmarks of this kind of interaction. Entering such a discursive lesson part way through, and without the historical knowledge to decode the dialog might leave the learner lost and unable to understand the conversation.

However, in face to face interactions, there are many tacit verbal practices that permit interactants to keep track and update, or even to repair gaps in understanding, in a conversation (Hutchby & Wooffitt, 1998). Many of these practices are founded on the serialized turn taking of face-to-face interaction (Hutchby & Wooffitt, 1998). ALN instruction that follows a discursive method imposes similar demands on students and teachers, but unlike face-to-face interaction all messages in an ALN are not serial. Instead, messages on

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one or many other topics may be received and read in any order and it is up to the interactants to piece together, the meaning of these non-sequential messages. Students and teachers alike, indicate that this is one of the most difficult components in asynchronous instructional environments.

Thus, one common problem is following the "thread" of an asynchronous discussion that is transacted between many persons over time. Losing the thread of asynchronous discussions can leave students and teachers confused and have harmful effects on students' motivation to learn. This paper will offer strategies and techniques to help ALN teachers and students "keep the thread" of a prolonged, asynchronous discussion.

Discussion

In this section of the paper, we describe the ways in which face-to-face conversational practice works to ensure the shared understanding of all interactions. We also describe how asynchronous interactions may violate these practices and inhibit the construction of shared understanding. Finally, we propose methods for communicating in asynchronous interactions that preserve face-to-face conversational practices and permit students in an ALN to engage in "discursive" learning (Laurillard, 1993).

Face-to-Face Conversations

In synchronous communication, all interactants are aware of (a) the contents of each utterance and action, and (b) the sequence of utterances and actions (Hutchby & Wooffitt, 1998; Mehan, 1980; 1979; Hymes, 1974). Each utterance is a response to its immediate predecessor and the ideas codified in each utterance are indexical (Hutchby & Wooffitt, 1998; Garfinkel, 1967) to the entire sequence of ideas encapsulated in the discussion. As a result of their participation in a discussion, interactants acquire knowledge of it over time, and *while* the interaction is taking place. Entering the discussion "part way through" may leave a person unsure of what is being discussed, and what has been mentioned previously.

However, there are tacit practices that interactants use to repair breaks in understanding or recall, and similar techniques that are used to narrow or alter the focus of a face-to-face interaction (Hutchby & Wooffitt, 1998). These practices and techniques can be used to assist interactants in keeping the thread of an ongoing conversation and even to catch up if it is necessary to refer to an earlier conversation or event, in the current dialog (Hutchby & Wooffitt, 1998).

Keeping the thread in face to face conversations. In face to face interactions, members of a conversation rely on several tacit practices of communication, to maintain a continuity of messages and a mutual understanding of others in the conversation and the topic(s) being discussed: (a) turn taking, (b) repair, (c) overlap, and (d) formulations.

Turn taking is so basic to conversation that it is almost unnoticeable—one person speaks, then another speaks, etc. However, this is so obvious that we might dismiss its necessity. The information embedded in each turn of a conversation is used like bricks and mortar to *build* a scaffold for constructing shared knowledge that is accessible to all interactants. A side effect of turn taking is that each utterance occurs in a relatively rapid sequence. According to the psychological principle of primacy-recency, this implies that interactants are most able to

recall the beginning of the conversation, and the most recent utterances—but to forget what was said in between.

If we did indeed forget these "middle" messages, conversations would not be very effective in transmitting quantities of information. Conversational repairs are used to fix troubles in communication. One such repair is to overcome the difficulty in remembering middle messages. This is accomplished through the use of indexical statements that refer back to things that were said earlier in the conversation, or before the present conversation. For example, the following is an example of an indexical reference that prompts the listener to recall something in order to understand the current statement. The ***bolded and italic*** text marks the indexical repair:

A: I'm worried that I don't understand exactly what (the teacher) wants in the project. I might do it in a way that he doesn't like, and.
B: Okay, but ***you also said*** that we can turn in a draft copy and get feedback so we can revise the paper before the deadline.

By repairing the conversation in this way, prior (and perhaps forgotten) utterances are brought back into the discussion so that the interactants remain aware of important topics or subtopics. Thus, even though the psychological principle of primacy-recency forecasts a potential problem, conversational practices have evolved to mitigate and prevent it from actually causing a problem.

In conversations that include more than two persons, the desire to take a turn can be signaled visibly by a movement of the face, head, hands or a shift in posture. A desire to take a turn can also be marked by conversational overlap (Hutchby & Wooffitt, 1998). Overlaps occur when a listener begins speaking before the first speaker is completely finished. Overlaps are not necessarily interruptions. Instead, they may indicate that the listener believes he or she understands the gist of the first speaker's message, and can now begin his or her conversational turn. Additionally, overlaps have the implicit effect of indicating that one is responding to the thing-that-was-being-said-when-the-overlap-started. Thus, and similar to the indexical repair described above, an overlap can also be a signal for what the following statement is referring to. For example, the following is an example of an overlap that serves this purpose. The " | " character indicates the point at which overlap occurs:

A: I'm worried that I don't understand exactly what (the teacher) wants in the project.
I might do it in a way that he doesn't like, and.
|
B: Okay, but you also said that we can turn in a
draft copy and get feedback so we can revise the paper before the deadline.
| |
A. Yeah Yeah

This conversation fragment also illustrates another feature of overlaps. They have a side effect of keeping conversational turns relatively short, thus introducing a smaller number of new ideas. In the example above, speaker "A" terminates his turn shortly after speaker "B" begins the overlap. In terms of the well-known limits to human short-term memory (7 ± 2), this is potentially important because it permits interactants (a) to listen and process the current utterance, while (b) conserving some short-term memory space for remembering prior utterances and (c) using remaining short-term memory space to prepare their response. (It has also been observed, that by preventing a person from overlapping when he or she has understood the gist of a statement can serve to annoy the listener. In instructional

conversations, annoyed listeners may *cease to be* listeners, lessening or removing the instructional value.)

Finally, in the course of conversations, individuals actively attempt to understand what is being said in terms of what has been said earlier and what they already know. Listeners are effectively trying to create a new understanding by combining new and old information and knowledge. In order to test this understanding, a person may offer it as a formulation, or a statement that synthesizes current information with what they already know. This formulation can serve several purposes. First, a formulation may be a check for validity—asking the question "this is what I understand, am I correct?" The conversational fragment below, illustrates this kind of formulation. The ***bolded and italic*** text marks the formulation:

A: ***So you mean that (the teacher) told you that he will accept draft copies of our project, and give us feedback so we can make changes before the deadline?***
B: That's what he said!

Second, a formulation may act to change the direction of a conversation by repackaging what is being said and adding a new idea. Thus, formulations may be used to verify one's evolving understanding of the conversation, or they may be used to focus or to move the conversational topic. The conversation fragment below illustrates the second type of formulation described above. The ***bolded and italic*** text marks the formulation and refocusing of the conversation:

A: I'm worried that I don't understand exactly what (the teacher) wants in the project. might do it in a way that he doesn't like, and.
B: ***Okay, but you also said that we can turn in a draft copy and get feedback so we can revise the paper before the deadline.***
A: Yeah, yeah
B: ***But we'll have to start working on it soon, so that we can give him a draft copy. When do you want to get started?***

In both cases, a formulation serves to disclosing the speaker's understanding and keeping other interactants aligned with this understanding. Without formulations, interactants will not be aware of each others' views and understanding and the discussion may erode into one where the interactants are not actually sharing information with each other—but only engaged in several separate monologues that appear to change topics suddenly and unpredictably.

In concert, turn taking, repairs, overlaps, and formulations, and other conversational practices, are used to keep all interactants "aligned" in a discussion, and to permit all parties to construct an understanding over the course of the conversation. The result is not one shared discussion where the group constructs a mutual understanding, but many shared discussions in which åll those present are not aware of what others are talking about nor able to take advantage of the distributed knowledge in the group.

Interactions in an ALN

Asynchronous interactions differ from face-to-face interactions in many ways but in terms of topic of this paper, the most important differences are the time lag between each message in a thread, and the loss of many basic conversational practices as described above.

The loss of conversational practice: Turn taking and overlap. Asynchronous classrooms permit many-to-many interactions. The conversational practice of turn taking cannot be easily maintained because there is no way to overlap, or otherwise signal the desire to take a conversational turn. Without the ability (or apparent need) to signal the desire to take a turn, each student can become the "next" speaker in the interaction. The frequent result is that many people may respond to one message, each potentially introducing a slightly different idea that may fragment the discussion into many small pieces. If other students respond to each of these sub-ideas, there is a likelihood that one or more of them will lose coherence with the main topic.

This is not an inherently bad situation because many ideas can be introduced and a wide (if not deep) range of issues can be addressed. However, this situation can easily decompose to the point where sub-discussions spawn even smaller fragments. It becomes increasingly difficult to manage these many sub-discussions. Student and teachers alike can become disoriented and lose sight of the goal of the discussion.

As noted above, one of the benefits of serialized turn taking is that interactants are able to respond to the statements made in the immediately prior turn and, either through overlap or indexical repairs, to indicate *what part of* a prior turn is being responded to. Thus, without the ability to manifest either turn taking, or overlap, with a subsequent loss in serialization of messages, there is a likelihood that each additional response to a message will be more and more difficult to understand.

The loss of conversational practice: Turn taking and indexical repairs. As described above, potentially dangerous side effects of the principle of primacy-recency are mitigated by the reiteration of prior information in a face-to-face conversation. As a result, listeners are reminded of important, but potentially forgotten, information that is necessary to interpret statements that will follow. However, in an asynchronous, many-to-many discussion where turn taking does not exist, the most recent messages read and responded to will be different for each student and each student's "recency" recall will be different.

Additionally, even though individual messages may contain indexical repairs of the kind described here, students can read messages in any order. Also, we have evidence to support the idea that many students do not even read all messages that are delivered to them. With this, there exists a possibility that students may read such an indexical reference before he or she reads the original message it is referring to. In each case, the result can be very disorienting to the reader.

The loss of conversational practice: Turn taking and formulations. Formulations are conversational artifacts that have the effect of "summarising, glossing, or developing the gist of an informant's earlier statements" (Heritage, 1985, p. 100). As described above, a formulation is frequently manifested as a "repackaging" of ideas that have been mentioned in earlier turns. As a result, formulations also rely on the idea that a listener has heard all of these prior ideas in terms of the present discussion. Missing one or two of the component ideas is similar to missing one or two critical pieces in a machine. The machine may not function, and the formulation may not be understood, leaving the learner without important information. As above, the result can be very disorienting.

To summarize this section of the paper, we are arguing that the loss of conversational practice can lead to breakdowns in the discursive instructional potential in an ALN. If left unchecked, such breakdowns can lead to student disorientation, lack of motivation, participation and eventual dropping out of a class.

Keeping the Thread in an ALN

There is a clear need for ALNs presently and in the future. What can be done to help learners to avoid such breakdowns and their potentially damaging effects. To date, there have been several attempts to solve the problems associated with "keeping the thread" using technological solutions.

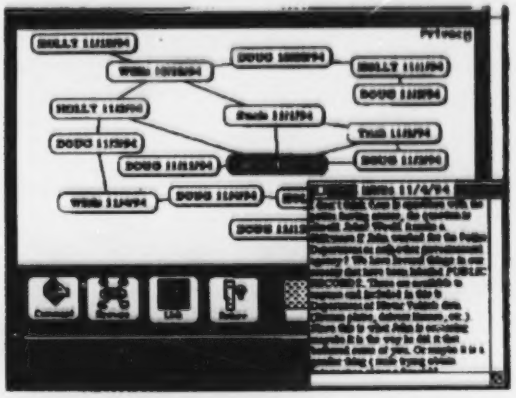

Figure 1: The graphical conversation network.

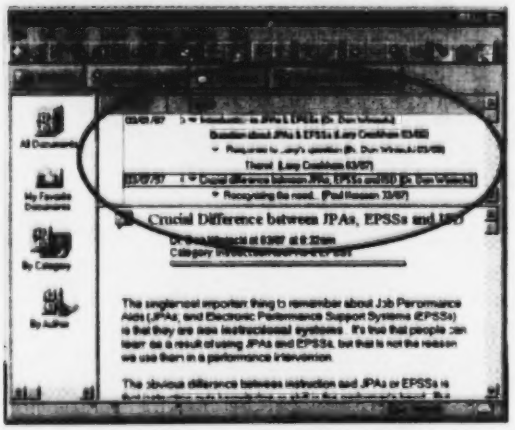

Figure 2: The threaded topic listing.

For example, one set of solutions proposes that the software system should display a graphical map connecting messages in a "node and network" view (Ahern, 1995) (figure 1). Another set of solutions proposes to represent discussions using structured writing methods such as the threaded topic listing (figure 2). Each of these solutions provide a topical map of the discussion but also requires that one retrace the sequence of messages in the discussion in order to recover the thread. Additionally, these technologies are bound to particular software tools. As a result, in order to use these techniques for keeping track of an ALN discussion, it must be hosted on a software system that includes such features. In other words, the technology of interaction is constrained and even controlled by software features—not by the needs or abilities of the interactants. In contrast to these technological solutions, we propose a reshaping of online communication conduct so that it more closely emulates face-to-face conversational practices. The result is a set of communicative practices that do not rely on any particular set of software features.

Using strategic snipping to simulate conversational overlaps. Among experienced users of E-mail, listserv, and discussion groups, it is relatively common practice to include a short section of the message being responded to, in the message being composed. We call this a "snip." Strategically embedding "snips" in with your message will give readers a reminder of the exact portion of the message you are responding to. When viewed and read as a single message, it reads like a series of short messages. The fragment below represents a message that embeds strategic "snips" of prior messages. Sections that begin with the initials AB are those "snipped" from another student's message. Unmarked paragraphs are those added by the instructor in response to these "snipped" questions.

```
AB>Perhaps I missed it along the way somewhere, but I am not real clear on
  >the meaning of indexical in the context of this JPA. Could you explain
  >what you are thinking about here?

"Indexicality" refers to the notion that any utterance (or sign) is perceived
and interpreted in terms of the environment in which it is said (or seen).
```

Using formulations and indexical repairs to emulate conversational practice. While strategic snipping can indeed assist a reader is retaining the thread of a message, it can only provide exact references to what your message is responding to. If the reader has succumbed to the primacy-recency effect (forgotten necessary components of earlier messages), or has not read enough of the preceding messages to enable them to grasp the embedded information, the reader may still fail to understand your message.

To overcome this potential problem, we have adopted the practice of beginning messages with a formulation that provides a synopsis of "who said what, to who, and when," and how these earlier messages are important to the following comment. The message fragment below represents a formulation that performs this duty. ***Bold and italic*** text marks the formulation. Sections that begin with CD and AB are comments "snipped" from earlier messages

```
Carl and I are discussing the use of transformational graphics in JPAs. Carl
offered that since they are somewhat affective (e.g., not objective), they don't
belong in JPAs. I countered and made an example of the Trip and Cal characters
on safety signs (mentioned by Tim and Bev).

CD>However, I will agree that their use is only called for in special situations, for
  >example when there is not a "direct" way to communicate the desired meaning.
```

```
AB>I'm not sure what you mean by not being able to communicate "directly" would you give
  >an example?

The Trip and Cal characters represent the careless and careful practitioner
(respectively). Because the reader can identify with their overall behavior
patterns, they evoke an image
```

Conclusions

Conversational practice contains many subtle and tacit techniques for allowing interactants to keep track of conversations that transpire over time (Hutchby & Wooffitt, 1998). These techniques can also be used to facilitate instructional interactions to occur in a constructivist and discursive mode (Laurillard, 1993). By their very nature, asynchronous learning networks (ALNs) violate some of these conversational practices and increase the possibility that learners can "lose the thread" of ongoing discussions. We have described several conversational practices that facilitate discursive interaction and how asynchronous discussions fail to follow them. Finally we have provided strategies for reconstituting conversational practice into ALNs, and presented some examples for how they have improved the ability of students to "keep the thread" of asynchronous discussions.

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Autobiographical Sketches

Dr. Donald J. Winiecki is an Assistant Professor, and full-time graduate faculty in the Instructional & Performance Technology department at Boise State University. He researches the social impact of technology, and the uses of computing devices as performance supports. He is a published researcher and has presented before the International Society for Performance Improvement, the American Educational Research Association, and the Association for Computing Machinery. He has delivered distance education courses to Master level students via both asynchronous learning networks (ALN) and digital compressed video, since 1996.

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